

1969

**OPERATING
SUMMARY**

FORT FRANCES

water pollution control plant

TD227
F67
W38
1969
MOE

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1970

WATER
COMMISSION

ONTARIO WATER RESOURCES COMMISSION

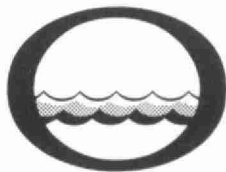
Division of Plant Operations

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Water management in Ontario

Ontario
Water Resources
Commission


135 St. Clair Ave. W.
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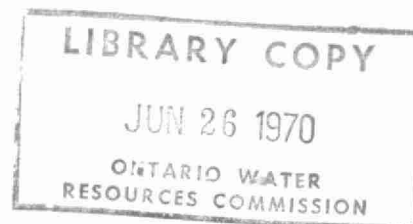
The operating efficiency and financial status of the water pollution control facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.


D. S. Caverly,
General Manager.


D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.



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FORT FRANCES
water pollution control plant

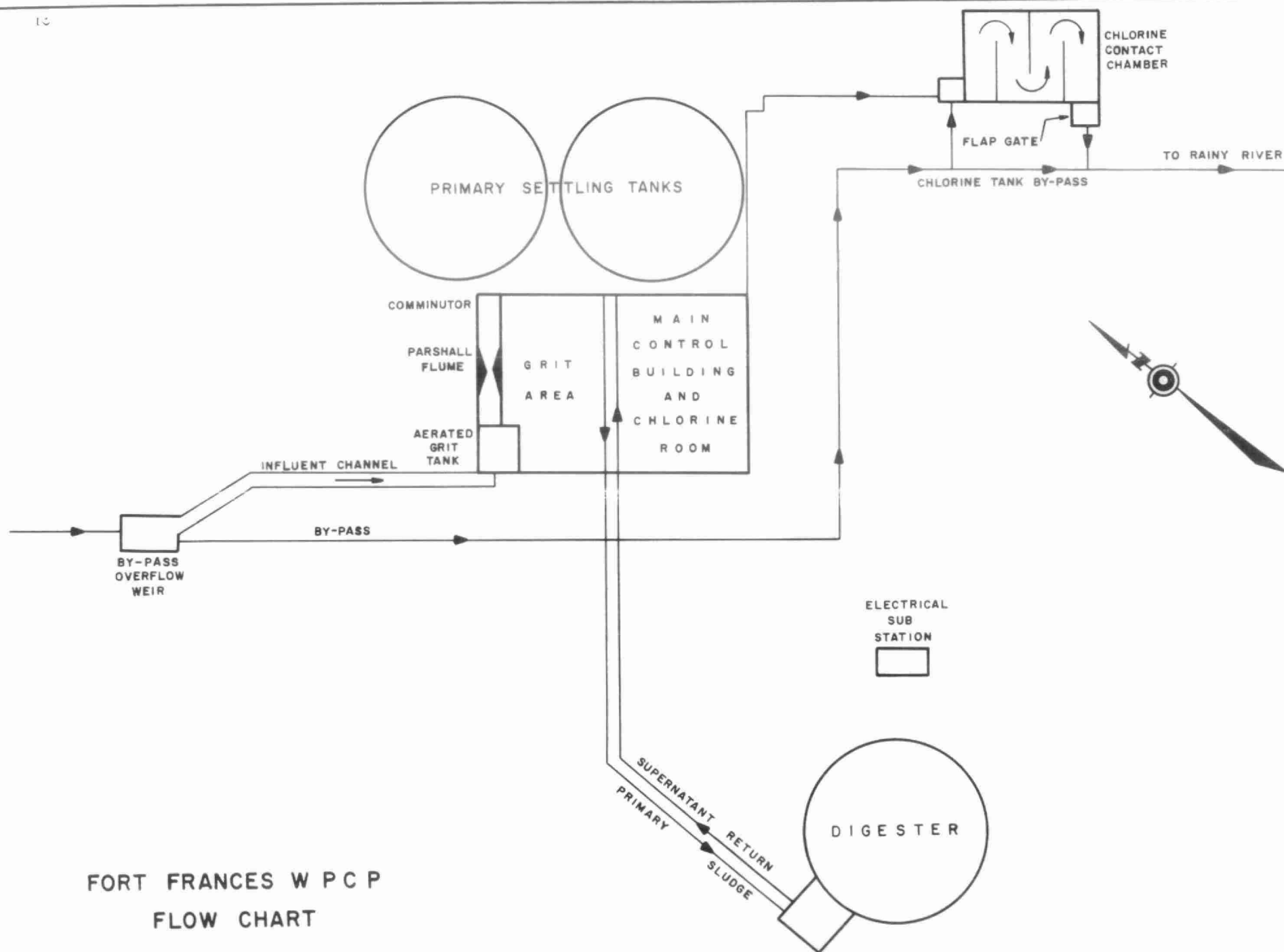
operated for

THE TOWN OF FORT FRANCES

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY



DESIGN DATA

PROJECT NO.	2-0060-59	TREATMENT	Primary
DESIGN FLOW	2.0 mgd	DESIGN POPULATION	12,000
BOD - Raw Sewage	130 mg/l	SS - Raw Sewage	180 mg/l
- Removal	40%	- Removal	60%

PRIMARY TREATMENT

Screening

- Coarse bar screen (2")

Comminution

Type: Smith & Loveless Model 15R

Grit Removal

Type: Aerated; grit removed by clamshell bucket
 Size: One 10' 5" x 10' 5" x 13' 9" swd
 (1515 cu ft or 9,400 gal)
 Retention: 6.8 min

Air Supply

Type: Roots-Connersville
 Size: One 100 scfm @ 9 psi

Primary Sedimentation

Type: Eimco Process
 Size: Two 40' x 40' x 10' swd
 (32,000 cu ft or 200,000 gal)
 Retention: 2.4 hours

Loading: Surface, 625 gal/ft²/day
 Weir, 9,660 gal/ft/day

CHLORINATION

Type: W & T Model A-731
 Size: 400 lb/day

Chlorine Contact Chamber

Size: 27' x 20' x 8.5' (avg)
 (4,590 cu ft or 28,600 gal)
 Retention: 20.6 min

OUTFALL

- to Rainy River

SLUDGE HANDLING

Digestion System

Type: Single stage with floating cover:
 gas mixed
 Size: One 40' dia x 25' swd (31,500 cu ft
 or 195,500 gal)
 Loading: 1.38 lb/cu ft/mo
 Mixer: Roots-Connersville Type XA

'69 REVIEW

GENERAL

In 1969 the plant staff assumed the responsibility of operating three additional municipal pumping stations. Including these, the staff now maintains one plant and five pumping stations.

The plant operated with an average efficiency of 53% BOD and 52% suspended solids removal. These results were slightly less than those of 1968.

Regular inspections were carried out by the operations engineer and staff during the year.

EXPENDITURES

The total operating cost for treating 692.8 million gallons of sewage was \$38,741.52. Unit costs of \$55.92 per million gallons treated and 13 cents per pound of BOD removed were realized.

The slightly higher unit costs as compared with those of 1968 are due in part to the decrease in flows.

PLANT FLOWS and CHLORINATION

The total flow to the plant during the year was 692.81 million gallons. The

average daily flow was 1.90 million gallons while the maximum and minimum flows were 3.13 and 1.29 million gallons.

A total of 11,064 lbs. of chlorine was applied to the effluent from May through October at an average dosage of 3.5 milligrams per litre.

PLANT EFFICIENCY

The influent BOD and suspended solids were 79 and 105 mg/l respectively. Effluent BOD and suspended solids were 37 and 50 mg/l, giving an average removal of 53% BOD and 52% suspended solids.

During the year a total of 320 cu. ft. of grit were removed.

SLUDGE DIGESTION and DISPOSAL

A total of 840,500 gallons of raw sludge was digested at the plant during the year. The digestion process increased the total solids concentration by four percent. A sludge hauling contractor disposed of 1052 cu. yds. of liquid digested sludge during 1969. There were 648,500 gallons of supernatant returned to the plant process during the year.

CONCLUSIONS

The plant operated near design capacity throughout the year. The probability curve shows that plant operation exceeded the hydraulic design capacity 29% of the time.

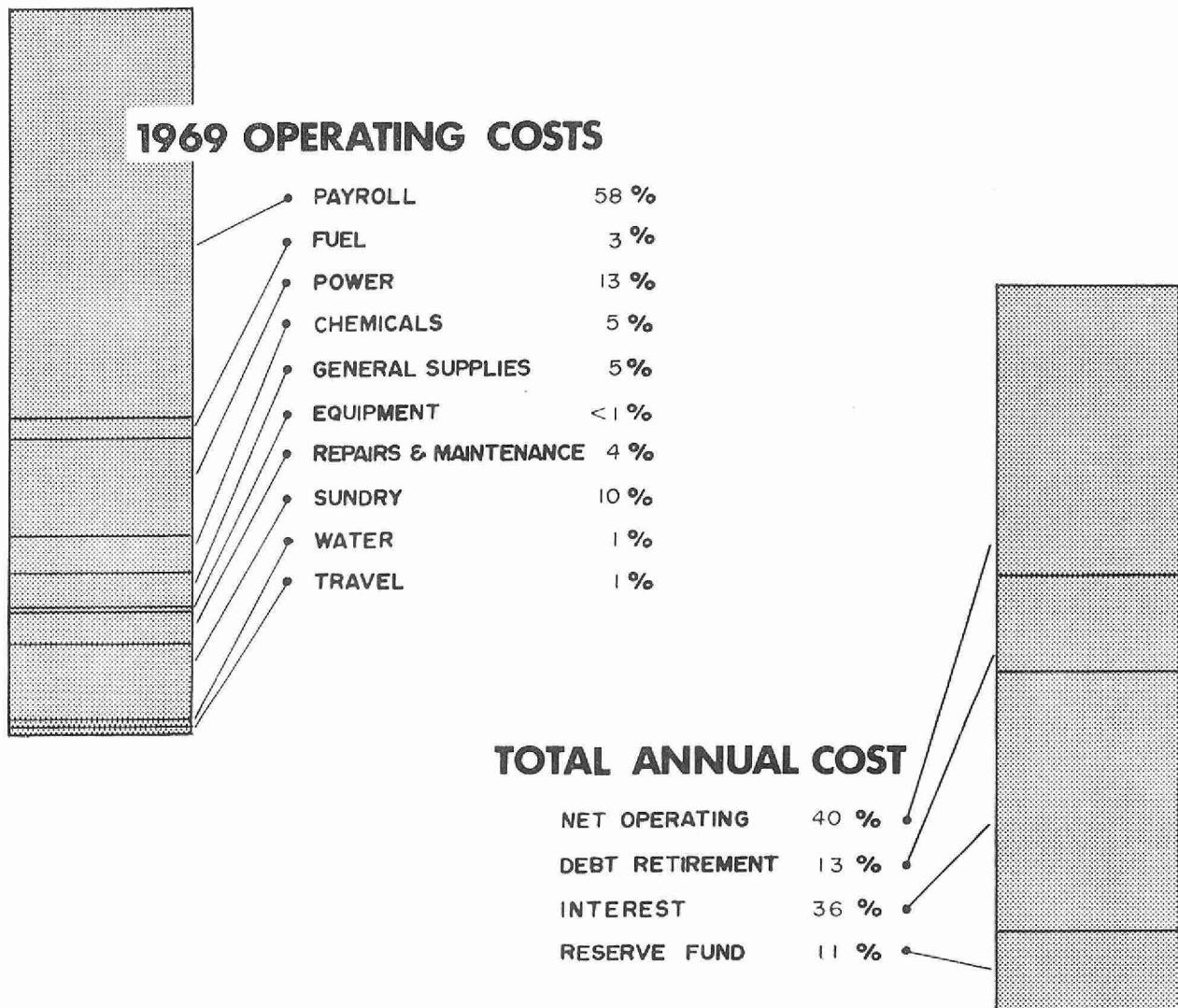
Every effort should be made to separate storm and sanitary flows further. If such separation should prove financially inefficient, enlargement of treatment facilities should be considered.

PROJECT COSTS

NET CAPITAL COST (Final)	\$1,894,347.61
DEDUCT - Portion financed by CMHC/MDLB (Final)	<u>1,276,239.07</u>
Long Term Debt to OWRC	\$ <u><u>618,108.54</u></u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	\$ <u><u>85,058.18</u></u>
Net Operating	\$ 38,741.52
Debt Retirement	12,473.00
Reserve	10,161.21
Interest Charged	<u>34,604.72</u>
TOTAL	\$ <u><u>95,980.45</u></u>

RESERVE ACCOUNT

Balance @ January 1, 1969	\$ 60,617.72
Deposited by Municipality	10,161.21
Interest Earned	<u>3,472.79</u>
	\$ 74,251.72
Less Expenditures	<u>4,608.45</u>
Balance @ December 31, 1969	\$ <u><u>69,643.27</u></u>



Yearly Operating Costs

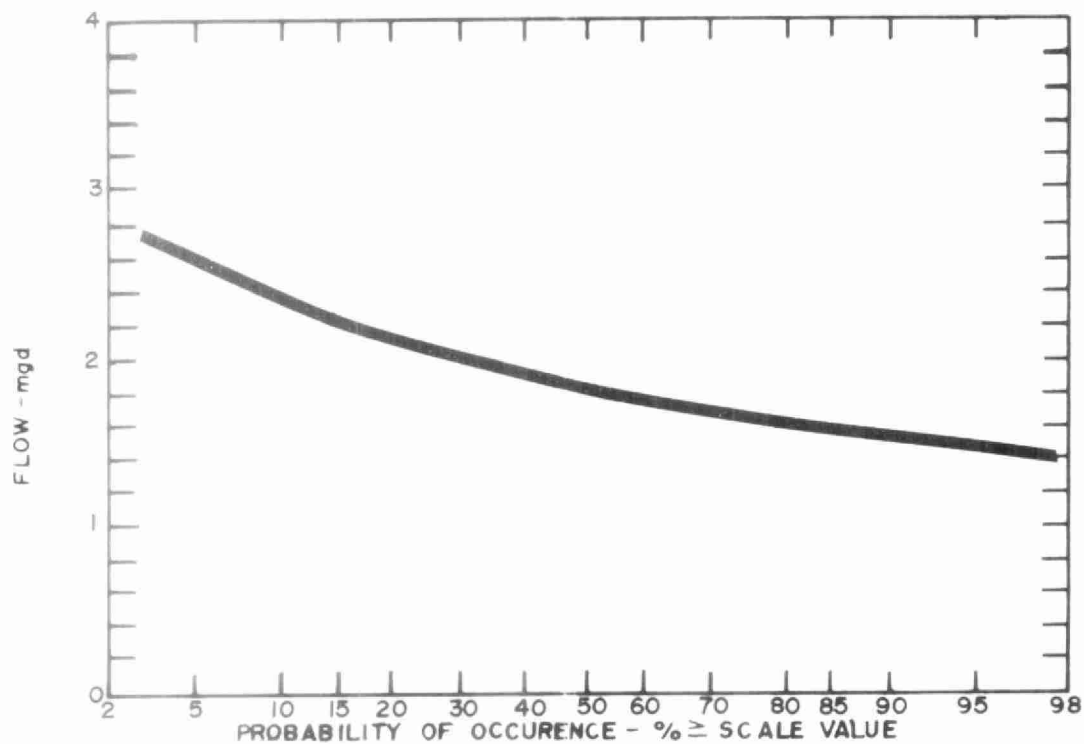
YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1965	562.759	\$29,310.65	\$52.08	-
1966	762.339	32,057.25	42.04	11 cents
1967	691.262	35,624.59	51.54	13 cents
1968	736.200	36,705.23	49.86	11 cents
1969	692.810	38,741.52	55.92	13 cents

Monthly Operating Costs

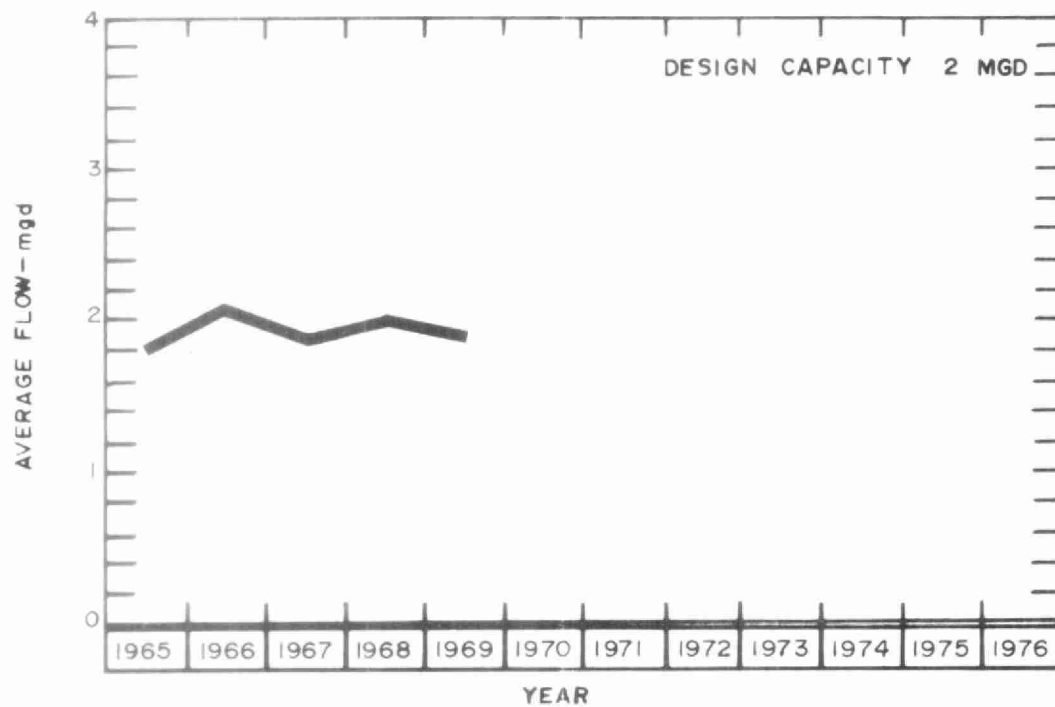
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY *	WATER	TRAVEL
JAN	3092.74	2867.36	-	-	174.47	-	-	-	-	50.91	-	-
FEB	2610.61	1636.02	-	348.52	457.33	-	92.91	-	28.36	14.97	32.50	-
MAR	3493.90	1601.82	-	286.26	568.62	-	179.78	25.00	45.44	754.48	32.50	-
APR	2796.98	1786.91	-	290.16	276.53	-	172.40	-	33.19	205.29	32.50	-
MAY	3276.20	1858.60	-	-	347.01	341.39	225.74	-	35.58	353.38	32.50	82.00
JUNE	2998.12	1690.64	-	237.22	372.76	-	114.75	-	155.30	389.95	32.50	5.00
JULY	3091.19	1661.57	-	-	352.35	388.77	200.74	-	81.62	262.24	32.50	111.40
AUG	3692.71	2458.24	-	-	328.05	91.04	-	-	443.58	339.30	32.50	-
SEPT	3790.41	1656.99	-	-	407.75	936.37	331.77	7.31	82.09	253.63	32.50	82.00
OCT	2606.18	1686.40	-	28.00	324.65	-	246.48	-	237.75	50.40	32.50	-
NOV	3136.97	1702.57	-	-	343.05	-	104.51	-	464.25	359.74	-	162.85
DEC	4155.51	1686.86	-	-	925.39	-	310.96	23.07	129.02	936.81	32.50	110.90
TOTAL	38741.52	22293.98		1190.16		1757.57	1980.04	55.38	1736.18	3971.10	325.00	554.15

* SUNDRY INCLUDES SLUDGE HAULAGE COSTS WHICH WERE \$2,887.20 and include cost of digester cleanout.

PROCESS DATA



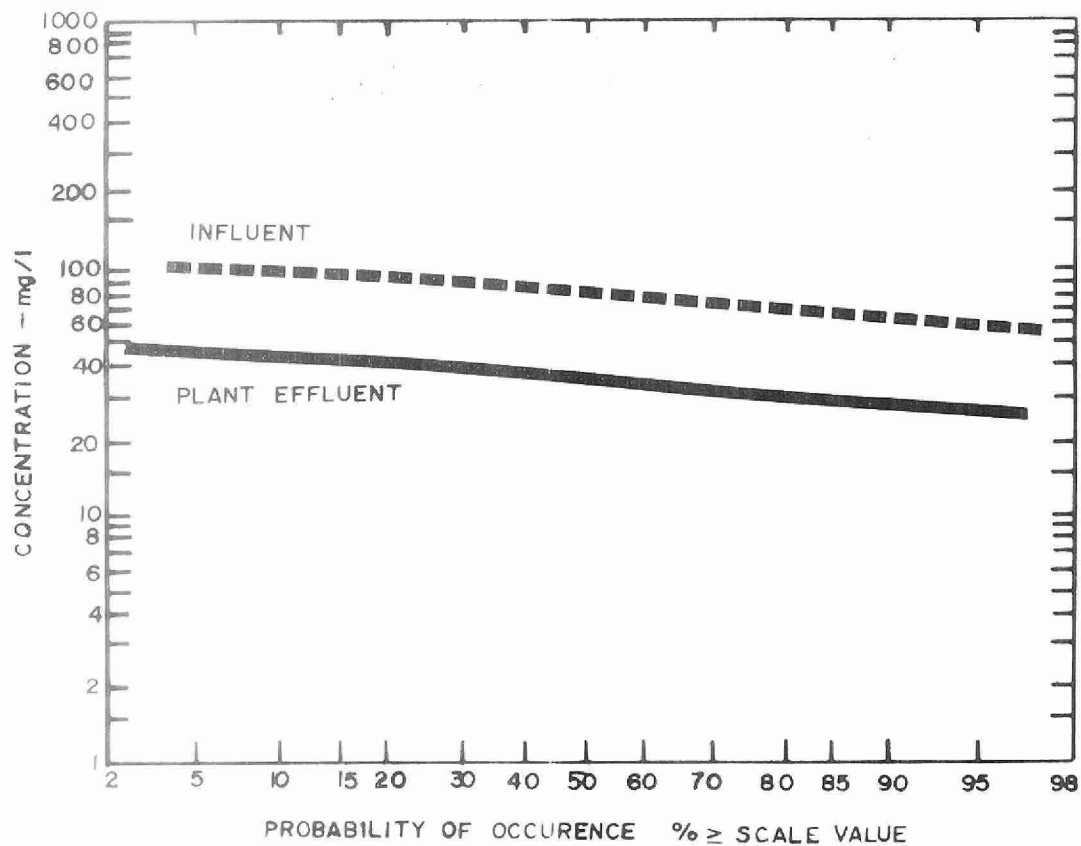
FL O W S



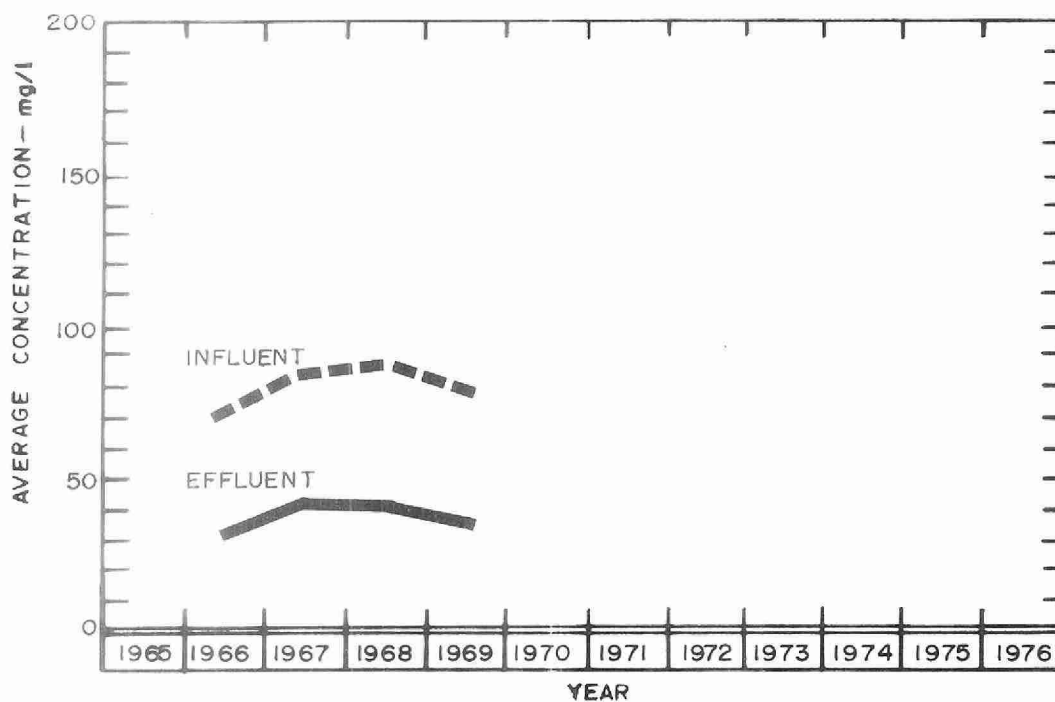
PLANT FLOWS and CHLORINATION

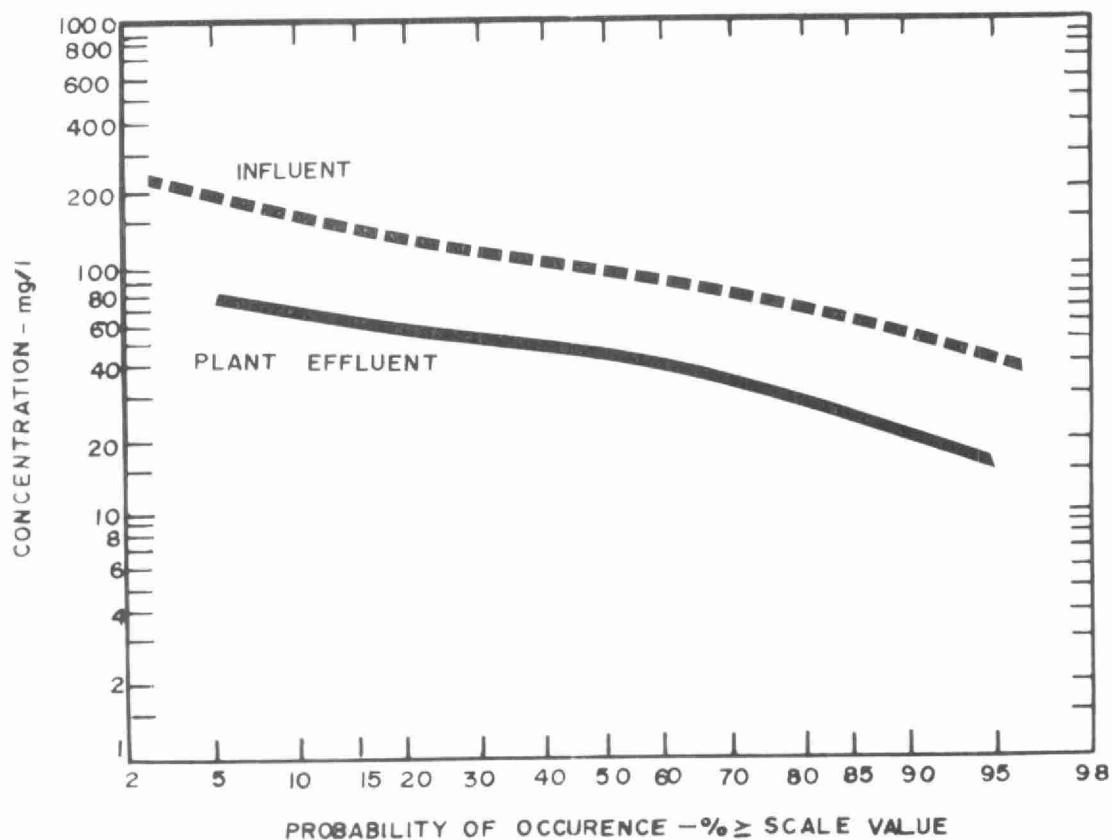
MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED 10 ³ pounds	DOSAGE mg/l
JAN	46.26	1.49	1.89	1.29	0	0
FEB	52.15	1.86	2.57	1.54	0	0
MAR	66.28	2.14	2.83	1.69	0	0
APR	74.21	2.47	3.13	1.98	0	0
MAY	58.88	1.90	2.17	1.77	1.27*	4.2
JUNE	53.50	1.78	2.20	1.38	2.12	4.0
JULY	51.93	1.67	2.21	1.36	2.23	4.3
AUG	57.45	1.85	2.76	1.42	1.78	3.1
SEPT	48.43	1.61	1.85	1.38	1.87	3.9
OCT	67.96	2.19	2.88	1.52	1.78	2.6
NOV	58.76	1.96	2.06	1.84	.01*	0.2
DEC	57.00	1.84	2.00	1.74	0	0
TOTAL	692.81	-	-	-	11.06	-
AVERAGE	-	1.90	-	-	1.84	3.5

* Chlorine applied between May 16 and November 2

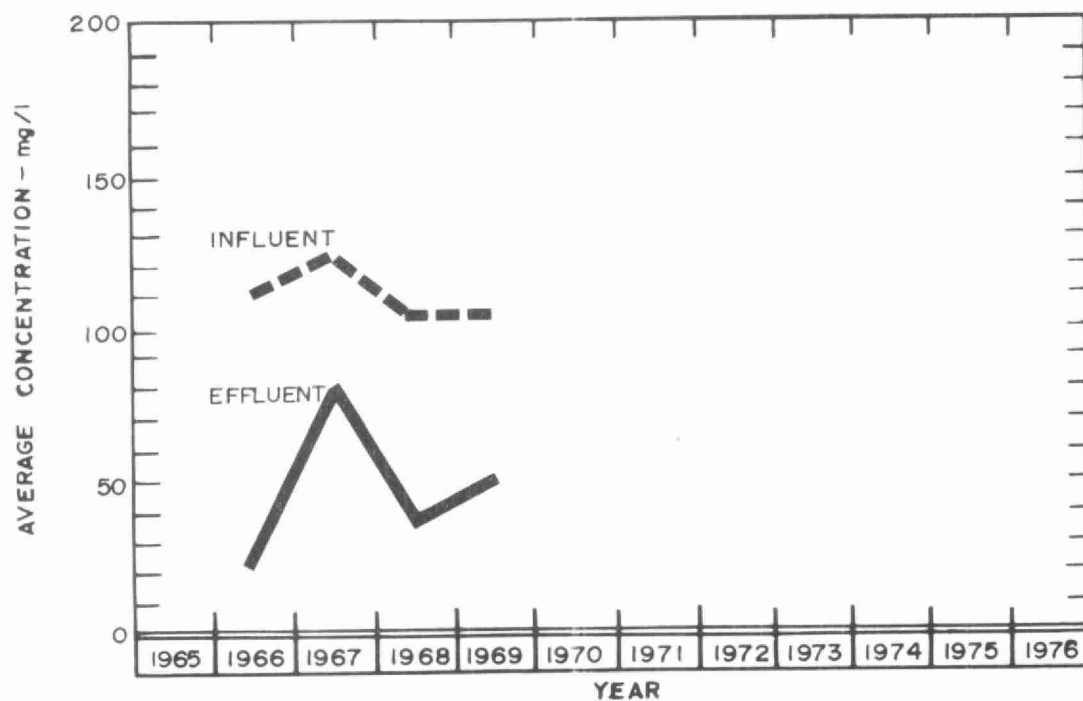


BIOCHEMICAL OXYGEN DEMAND



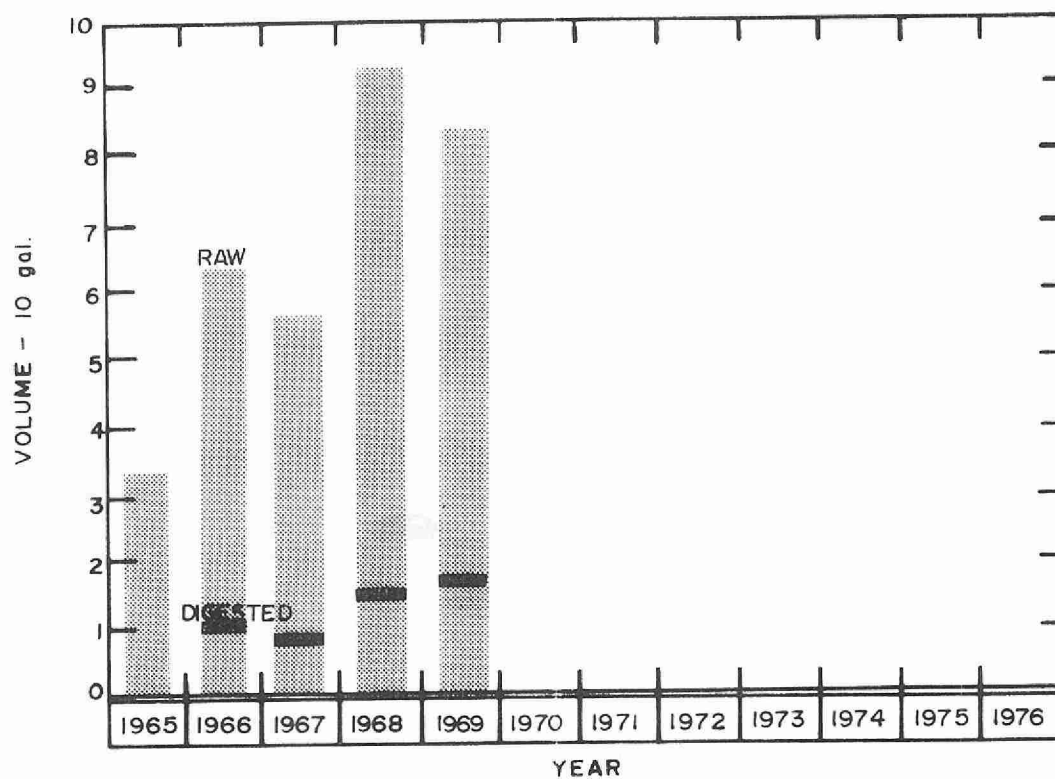


SUSPENDED SOLIDS

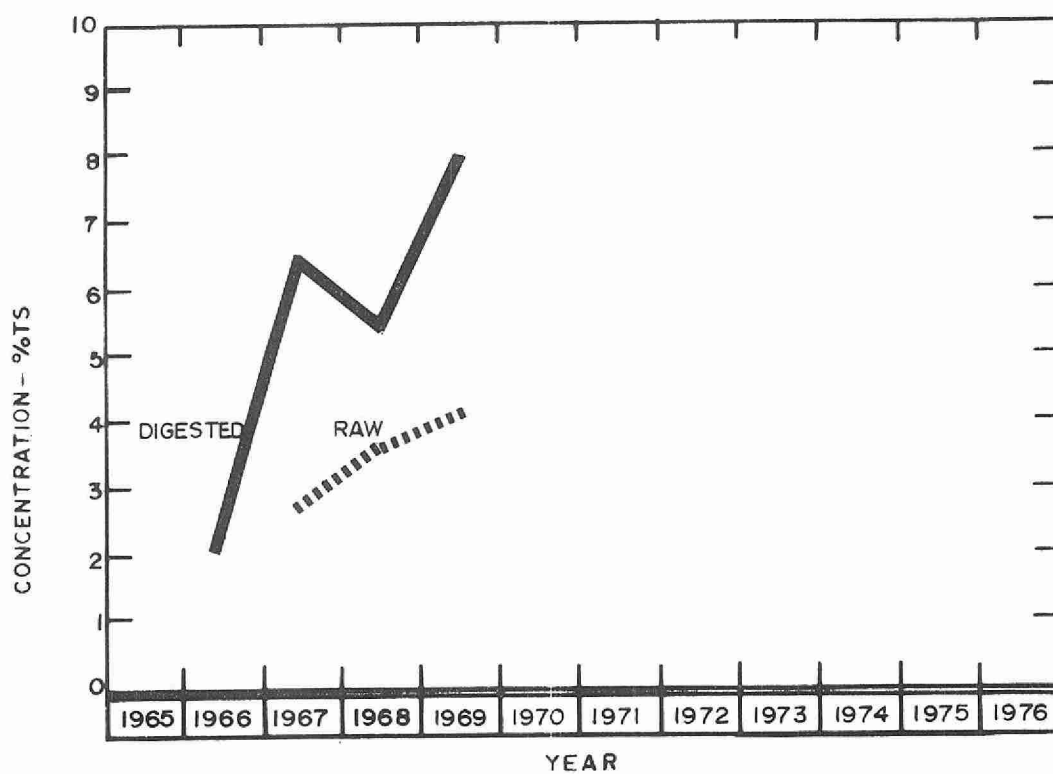


PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL cu ft
	INF. mg/l	EFF. mg/l	REDUCTION		INF. CONCN mg/l	EFF. CONCN mg/l	REDUCTION		
			%	10 ³ pounds			%	10 ³ pounds	
JAN	76	36	52	18.5	55	21	62	15.7	15
FEB	68	33	51	18.3	57	25	56	16.7	87
MAR	80	38	52	27.8	88	39	56	32.5	5
APR	77	36	53	30.4	132	65	51	49.7	10
MAY	89	42	52	27.7	108	38	65	41.2	10
JUNE	76	36	52	21.4	94	42	55	27.8	0
JULY	78	34	56	22.8	138	80	42	30.1	25
AUG	83	39	53	25.3	128	45	65	47.7	90
SEPT	98	52	46	22.3	102	43	58	28.6	25
OCT	74	33	55	27.9	183	102	44	55.0	10
NOV	76	34	55	24.7	87	42	52	26.4	33
DEC	76	31	59	25.7	86	61	29	14.3	10
TOTAL	—	—	—	—	—	—	—	—	320
AVERAGE	79	37	53	24.4	105	50	52	32.1	26



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	DEWATERED	LIQUID
	10 ³ gal	%	%	10 ³ gal	%	%	10 ³ gal	%	cu yd	cu yd
JAN	63.5	3.	77	45.0	5.	50	45.2	.2	0	270
FEB	67.6	3.	67	12.0	6.	52	54.6	.4	0	72
MAR	115.0	3.	75	12.0	5.	53	53.6	.1	0	72
APR	76.0	2.	70	15.0	9.	44	67.2	.1	0	90
MAY	75.4	2.	65	19.0	11.	36	49.3	.1	0	114
JUNE	78.4	2.	63	15.0	11.	36	58.0	.1	0	90
JULY	76.2	3.	60	19.0	10.	34	57.2	.1	0	114
AUG	59.3	4.	59	10.0	7.	35	61.4	.3	0	61
SEPT	33.4	4.	65	3.0	13.	41	27.0	.2	0	19
OCT	76.9	4.	61	17.0	6.	51	83.9	.1	0	102
NOV	65.9	4.	69	2.0	5.	50	57.3	.2	0	12
DEC	52.9	5.	60	6.0	6.	51	33.8	.2	0	36
TOTAL	840.5	-	-	175.0	-	-	648.5	-	0	1052
AVERAGE	70.0	4.	65	15.0	8.	44	54.0	.2	0	88

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